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Material should preferably be typed on one side of paper 8½ x 11 inches, with wide margins. Carbon copies are not satisfactory. Any table, illustration etc. quoted from another published source must have the permission of both author and publisher.

Opinions expressed in articles appearing in *The Bulletin* do not represent the policy of The Medical Society of Nova Scotia unless specifically stated to do so.

Infirmiry Issue

Once a year, at any rate for the past two years, there has been a great scurrying around at the Infirmiry, a licking of pencils and a scratching of heads as we put together another issue of *The Bulletin*. This perhaps is not the best way to make memorable contributions to medical literature. There are those who would hold, and hold strongly too, that even if the contributions to medical journals were cut to one-tenth of the present volume, the publication of most of the remaining papers would still be unwarranted. Certainly none of us reads one ten-thousandth of the material published in our own language alone. Why then the spate of articles?

There are, of course, many reasons but the one which has motivated this Issue is not the least important: if we do not publish our horizons contract and our medical acumen atrophies from disuse. For millenia medicine followed a stultifying orthodoxy, apprentice treading carefully in the footsteps of his master, only here and there a maverick who dared to observe and deduce. The change has occurred almost within our own lifetime and even now despite the vast amount of medical research which is being conducted, the public image of medicine tends to be one of unchanging orthodoxy whereas we ourselves recognize that it is axiomatic that we remain always inquisitive.

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It is excellent for a hospital to sponsor a scientific publication at least once a year, for the medical staff to brush away the cobwebs, to sit down and take stock of the knowledge they have gained, the mistakes they have made, the ideas which have occurred to them, the interesting facts they have observed. We make, then, no apologies for this Issue which contains something, we feel, for everyone; some new procedures, an assessment of some old ones, the brief records of a few cases we have found interesting. But whether or not anyone is interested in our conclusions, it has been good for us to attempt this publication and we commend the practice of sponsoring an issue of the Bulletin to each hospital throughout the province. The only question which arises is whether one issue is enough.

AGGRESSION

In all societies doctors are important, even witch doctors. We must be careful not to play God but also we must not shirk responsibilities that fall squarely on our shoulders. Conceived in fear, born in secrecy and nurtured on horror, atomic warfare saw its infancy in 1944. For twenty years now the threat of imminent atomic warfare has hung over the world like the Sword of Damocles.

As physicians we are prepared to concede that fear and aggression play a large part in the sickness of our patients and that it is necessary for us to treat these facets of the illness. We shy away however from recognizing our responsibility in treating the sickness of the world. Should we not stop to think after showing our individual patients how to deal with their aggressions whether it is not our fundamental duty also to play a major role in the treatment of world aggressions?

Lawyers in different countries subscribe to widely different legal codes, historians and social scientists are divisive, the very nature of the work of the physicists and chemists tends to invalidate their close international association; only Medicine has an international bond, unadulterated by national interests.

The New England Journal of Medicine, in a telling Editorial points out "The undercurrents of violence. . . . will not quiet down of their own accord". Modern Medicine of Canada also states, along the same lines "The medical profession has with increasing frequency and benefit been allowing laymen to advise it on how to conduct some of its affairs. Now is perhaps time for the medical profession to reverse the flow and be articulately and bluntly critical of lay society".

Many phenomena at one time considered a part of man's destiny, such as cannibalism, human sacrifice, slavery and duelling now appear ludicrous. Surely just as ludicrous is the hysteria which dictates that we must accept the inevitability of an international conflict which will obliterate us all. Let us hope that in 1965 we shall abandon the childish attitude that we must either be close friends or sworn enemies of everyone and that there are no intermediate zones where we are prepared to live and let live. It is up to us to apply our medical knowledge to world affairs; let us take action before it is too late. □

I.D.M.

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There are only so many pages in the BULLETIN and in our enthusiasm our contributions have far exceeded these. Additional articles from the Departments of Obstetrics & Gynecology, Psychiatry, Radiotherapy and Surgery have with great reluctance been held over. They will be published in an early issue.

Correspondence

Kalman's Syndrome

To the Editor:
Nova Scotia Medical Bulletin
Sir,

The cooperation of physicians in Vermont and Canada is requested in the referral of patients having hypogonadism associated with anosmia or with clefts of lip and palate, or with both associated difficulties, for a study of Kallmann's syndrome being conducted at the Clinical Center by the National Institute of Arthritis and Metabolic Diseases.

Patients who have normal sexual maturation are also of interest for this study if they have anosmia associated with clefts of lip or palate.

Physicians interested in having their patients considered for admission to this study may write or telephone:

Saul W. Rosen, M.D.
Clinical Center, Room 8-N-242
National Institutes of Health
Bethesda, Maryland 20014
Telephone: 656-400, Ext. 63058
(Area Code 301)

The Use of Radioisotopes in Tests of Renal Function

C. T. G. POMROY, B.Sc. AND W. CONSTABLE, M.B., CH.B., D.M.R.T.*

At the present time there are some six clinical applications of radioisotopes to renal function studies, namely:

- i) Hippuran I-131 renogram
- ii) Neohydrin Hg-197 scan.
- iii) $^{86}\text{RbCl}$ differential uptake
- iv) Neohydrin Hg-197 renogram
- v) Dynamic scanning using the scintillation camera or autofluoroscope.
- vi) Determination of effective renal plasma flow by means of Hippuran I-131.

Of these only the first two are sufficiently well established to be in wide routine use.

1) The Hippuran I-131 Renogram

The Hippuran I-131 renogram has been quite extensively reported,^{1,2}. Basically the method consists of placing a well collimated scintillation detector over each kidney with the patient usually in a sitting position. The detectors are connected to a dual electronic system comprising radiation analysers, ratemeters, and chart recorders. When the patient is comfortably seated, an injection of Hippuran I-131 (Sodium orthohippurate) is given into an antecubital vein, and a dual recording is obtained showing the passage of the tracer through each kidney. (See fig. 1). The test takes 30 mins. or less to complete, and requires little or no preparation.



Figure 1 Patient in position for Renogram.

*Department of Radiotherapy, Halifax Infirmary.

The amount of Hippuran I-131 used (about $5 \mu\text{c}$ in $20 \mu\text{gm}$ in this department) is such that the radiation dose to each kidney is of the order of .003 rad, and sensitivity reactions to the Hippuran have not been encountered.

Much has been written about analysis of renogram curves, but it remains a largely qualitative procedure. The curves are so characteristic, however, that a great deal of information can be obtained, while the precise physiological significance of each segment remains in some dispute.

The normal renogram curve may be divided into three segments, (see fig. 2). The first segment (AB), usually termed the "vascular" segment, was thought to represent the bolus of Hippuran from the injection filling the vascular bed of the kidney. It has been pointed out however, by Dore et al.³ that up to 90% of this segment can be accounted for by extra-renal radioactivity, and thus the first segment is not considered useful as an index of renal blood flow.

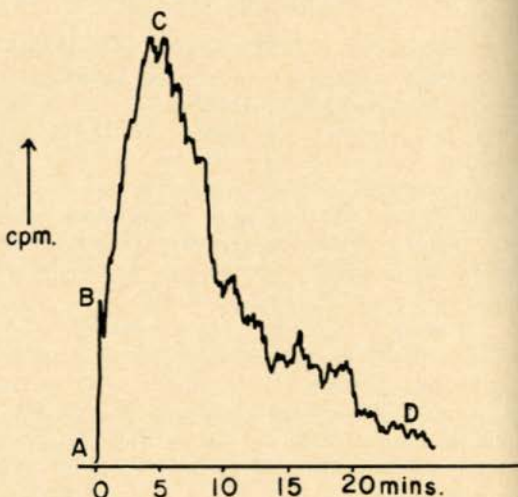


Figure 2 Normal Hippuran I - 131 renogram curve.

A = injection point : for explanation see text.

The second segment BC, known as the "functional" segment, represents the accumulation of Hippuran in the kidney as it is removed from the blood by the tubules. The slope of this segment will depend both on the rate at which Hippuran

is presented to the tubules, i.e. the renal blood flow, and the rate at which it is extracted from the blood; Tauxe et al⁵ have shown that the slope correlates quite well with differential *para*-amino hippuric acid (PAH) clearances. The fraction of Hippuran removed from the blood at each passage through the kidney (the extraction ratio) is similar for both PAH and Hippuran, and according to Smith⁴ is equal to about 0.91. This ratio is independent of renal blood flow until the latter is reduced to less than 10% of normal.

Dore et al (op. cit.) consider that the renal blood flow is the only significant factor influencing this segment, since the maximum concentration of Hippuran in the plasma is less than 1/10,000 of the tubular maximum transport capacity (T_m); and in order that the secretion of Hippuran should be reduced at all, an almost complete absence of tubular function would be necessary.

The third segment, (CD) is known as the "excretory" segment and represents the drainage of Hippuran down the ureter. Point C represents the point at which the rate of drainage exceeds the rate of accumulation, and in practice it represents the time at which the first Hippuran leaves the field of view of the detector down the ureter. The time from A to C is called the renal transit time, and has a normal value of about 4 minutes. This is not affected to any extent by differences in instrumentation and technique and in fact similar values have been quoted by a number of authors, (1, 2, 5, 6). Times longer than 4 or 5 minutes are considered abnormal.

The third segment falls approximately exponentially and the rate at which it falls can be estimated by measuring the time required for C to

drop to $\frac{C}{2}$. This rate is dependent on urine flow

and is influenced by the state of hydration of the patient. Prolongation of both the second and third

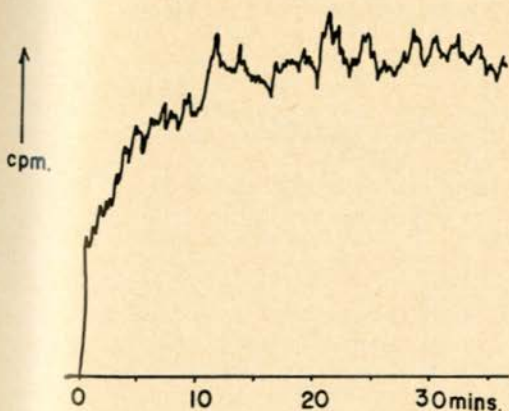


Figure 3 Renogram showing ureteral obstruction.

segments can occur if the patient is dehydrated, and some authorities use either fasting or administration of water to obtain a similar state of hydration in all patients.

Fig. 3 shows a renogram obtained in a patient with ureteral obstruction caused by a stone, and shows complete absence of the third segment. In this case the renal transit time is infinite. The use of the renogram in cases of obstruction is discussed by Constable et al¹⁸ and Gerbie et al⁶.

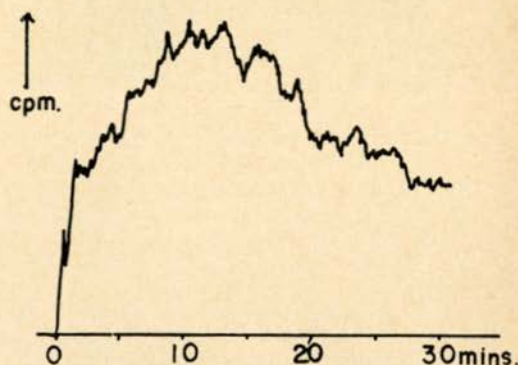


Figure 4 Renogram showing impaired function.

Fig. 4 shows a renogram obtained in a patient with long-standing hypertension. The renal transit time is increased to about 10 mins., and the rate of fall of the third segment is decreased, reflecting decreased urine flow. The overall picture is one of impaired renal function.

The major shortcomings of the Hippuran renogram at the present time are;

- i) lack of an internationally standardised procedure such as the one established for ¹³¹I thyroid uptake measurements⁷. This would allow meaningful comparison of curves between different departments and pave the way for adoption of a universal method of analysis when available,
- ii) lack of a mathematical analysis of the curve that accounts for its various characteristics in a quantitative way. Work is in progress to provide such an analysis by Brown & Kretschman⁸, and it is hoped that a similar study may be carried out in this department in co-operation with the Department of Medical Biophysics at Dalhousie University.

2) Neohydrin Hg-197 Scan

This test has also been well reported⁹ and is fairly well standardised between different centres. With no preparation, an intravenous injection of 100 μ cs. Neohydrin Hg-197 is given (radiation to each kidney being of the order of 0.6 rad). At about $\frac{3}{4}$ hr. later the patient is placed in a prone position on a couch and the back is scanned. The procedure takes about 30 min.; the resulting paper

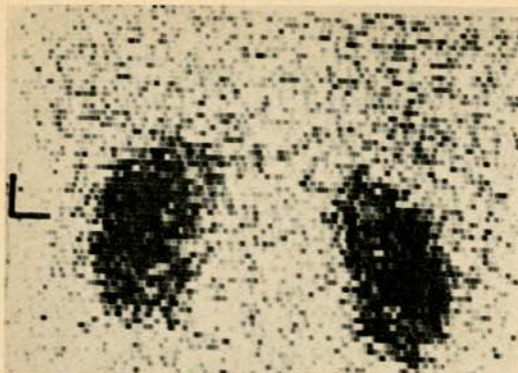


Figure 5 Normal Neohydrin Hg 197 renal photoscan.

scan is available immediately, and the photoscan soon afterwards. See fig. 5.

Any commercially available scintillation scanning equipment is suitable for this test. In this department a Nuclear Chicago Pho-Dot scanner with a 3 x 3 inch crystal is used. A slight amount of background cut-off is applied to the photo recording to give a sharper outline of the kidneys.

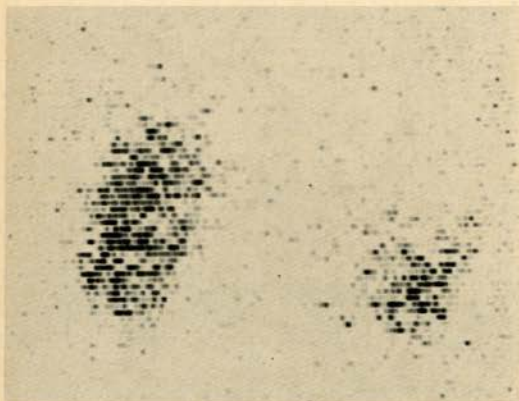


Figure 6 Photoscan showing renal tumour.

The Neohydrin scan has proved useful in three main conditions:

- i) Renal tumours, which show up as fairly well-defined voids in the kidney mass, fig. 6.
- ii) Polycystic kidney, in which the distribution of isotope is patchy and the kidney is enlarged. fig. 7.
- iii) Contraction or enlargement of the kidneys, which may be determined by reference to normal values for kidney size. It should be emphasised that with a focussing collimator on the scanner the image of the kidneys is actual size and no correction for magnification has to be made.

The scan is established as a valuable procedure, and with skilled interpretation is capable of giving much useful information. It is essential, however, that the interpreter be familiar with the scanning equipment, and is also aware of the instrument settings used, since by manipulation of the scanner controls the appearance of a scan can be considerably altered. In this respect it is desirable that scans be performed with minimum changes in instrument settings, and the use of a tape recording system is of great value.

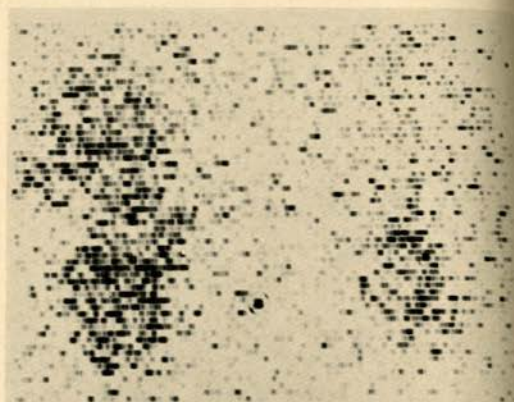


Figure 7 Photoscan showing polycystic kidney.

3) $^{86}\text{RbCl}$ Differential Uptake

The clinical use of this test is reported by Torrance¹⁰; it is based on the finding by Sapirstein¹¹ that about 10% of an intravenous injection of $^{86}\text{RbCl}$ will be taken up by the kidneys, the final amount of uptake being proportional to the renal blood flow.

The patient is positioned as for a renogram, and about 40 μcs . $^{86}\text{RbCl}$ injected (radiation to each kidney being of the order of 4 rads.) In a few minutes the curve of recorded activity reaches a plateau, and location of the kidneys is checked

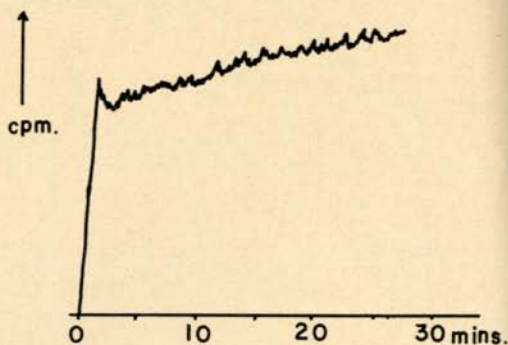


Figure 8 Normal Neohydrin Hg 197 renogram curve.

by moving the detector slightly up and down until a maximum reading is obtained. The difference in height between the plateau on both sides is calculated as a percentage of the higher one.

From Torrance's series of 19 normals, a 95% confidence limit of from 15% on the right to 17% on the left was established.

Torrance studied 17 nephrectomised patients and found with left nephrectomy a difference of $(42 \pm 14.4)\%$ and with right nephrectomy a difference of $(32 \pm 11.4)\%$. The difference between 32% and 42% is slightly significant ($.05 < p < .1$) and suggests that concentration of ^{86}Rb in the liver may be contributing to the reading on the right in some cases.

Due to the fact that the ^{86}Rb is not selectively taken up by kidneys, body background is high, and also the difference in count rate between sides would depend very strongly on the geometry of the detectors etc., and could not be expected to be the same in different departments, using different equipment.

The difference of 32% on the right for right nephrectomy quoted by Torrance suggests that the test is not a sensitive one, and would detect only gross differences in renal blood flow. The cases studied by Torrance with significant differences were nearly all found to have severe renal disease, and it is felt that this degree of impairment would have been apparent from a Hippuran renogram.

5) Neohydrin Renogram

This test is relatively new, and follows from the use of Hg-197 neohydrin for renal scanning. Since the scanning dose has to be given 45 mins. before the scan commences, it is a simple matter to sit the patient at the renogram equipment before giving the injection. The resulting curves differ substantially from the Hippuran curves (fig. 8), and it is felt by some that they contain additional information.

The leading proponent of this procedure is Sodee^{12, 13} who claims that the curves are less sensitive to minor misplacement of detectors.

After an initial very rapid rise, the curve begins a long gradual rise that continues for more than 30 mins. the slope of this rise is measurable with precision and is considered an index of renal blood flow. The ratio of rate of uptake on right to that on the left is calculated as an index of differential blood flow, and values outside the range 0.85 - 1.05 are said to be abnormal. Since Neohydrin is handled by the tubules, similar considerations apply to this curve as to the first two segments of the Hippuran I-131 renogram curve.

The advantages of this test are:

i) Scanning dose is $100\mu\text{c}$, which will give a relatively high count rate and reduce statistical errors.

ii) Slow steady rise gives ample opportunity to

check that detectors are in correct position.

The disadvantages are:

- i) Very little published work on this test.
- ii) Gives no information regarding excretory activity of kidneys.
- iii) Only justified if renal scan required.
- iv) Cannot be repeated within 30 mins. as can Hippuran renogram.

5) Dynamic Scanning

This procedure involves the use of the Anger Scintillation Camera¹⁴ or the Bender-Blau Digital Autofluoroscope¹⁵ both very complex instruments, developed from the scintillation scanner, and presenting information in a form very roughly comparable to conventional X-ray fluoroscopy. Besides presenting a changing image of the organ under investigation, however, the counts per minute arriving at the detector from a particular area of the organ may be accumulated and measured. With this technique, Bender & Blau have been able to follow the course of an injection of Hippuran I-131 through the kidneys, and have plotted the "renogram" for the cortex, medulla, and pelvis separately.

There is no doubt that these instruments will become increasingly important during the next few years, and that they will be developed further to obtain more information about dynamic systems. Due to their complexity, however, they are extremely expensive and it is doubtful whether they will replace the "conventional" scanner for the purpose of organ delineation.

6) Effective Renal Plasma Flow

This procedure is also relatively new, and has been reported by Wagoner¹⁶. It is based on equations derived by Sapirstein¹⁷ from consideration of a compartmental model of the plasma-kidney system.

This model predicts that the rate of decrease of Hippuran from the plasma will follow a two component exponential curve. From analysis of this curve, the ERPF may be calculated.

At time 0 a single i.v. injection of Hippuran I-131 is given. Following this at 5 min. intervals blood samples are taken from the opposite arm, for about 75 mins. These are centrifuged and plasma obtained, which is counted in a scintillation wellcounter. The activity per ml. plasma is plotted against time on semi-log paper to obtain the two component curve from which the ERPF is calculated (fig. 9). The results obtained in a series of 25 patients by Wagoner et al. correlated well with clearance values obtained by classical PAH methods. The Hippuran values were always

slightly lower, however, ($\frac{\text{Chipp}}{\text{Cpah}} = 0.92$) and this

difference has not been fully explained, although

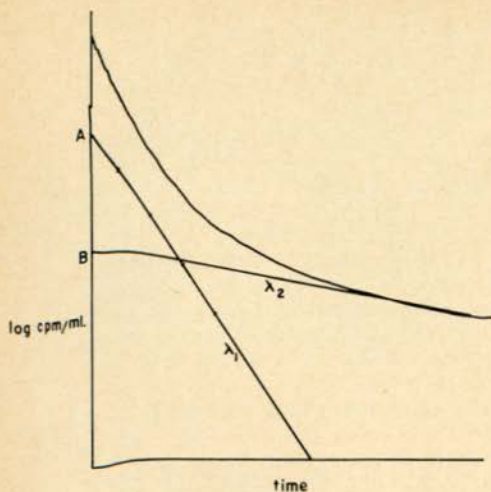


Figure 9 Curve showing decrease in plasma Hippuran I-131 activity. Line No. 1 ($A\lambda_1$) is obtained by subtracting line No. 2 ($B\lambda_2$) from the original curve, line No. 2 being the tangent to the last part of the original curve.

$$\text{Then: ERPF} = \frac{N \lambda_1 \lambda_2}{A \lambda_2 + B \lambda_1} \text{ where } N = \text{initial activity injected.}$$

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it is thought that it could be due to i) Presence of free ^{131}I in the injection. ii) Uptake of Hippuran by red cells, or various other factors.

It does enable a value of ERPF to be obtained in a much shorter time than with the classical method, and avoids the necessity of sustained infusions, urine collection and chemical analysis. The trauma of 15 blood samples in 75 mins. could possibly be avoided by correlation of the plasma activity curve with the curve obtained by placing a scintillation detector over the praecordium, and connecting it to a chart recorder via a logarithmic ratemeter. In this way the curve would be plotted automatically, and could easily be obtained while a standard renogram was being performed. Work along these lines is at present being undertaken by this department.

Conclusions

It will be seen from this survey that radioisotopes already have an important place in the evaluation of renal function, and it is felt that this importance will increase as the newer methods discussed here become more firmly established. The major features of these radioisotope methods are that they present a minimum of discomfort to the patient, and also that they lend themselves to quantitative mathematical analysis. □

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Lymphography and its Applications

S. G. CONSTANTINIDES, M.D.*

Although the first radiographic demonstrations of the lymphatic system in man were made in 1929¹, the idea remained unused clinically for about twenty years until Kinmonth² improved the technique so that clinical lymphography became relatively easy and practical.

It is the purpose of this paper to present some of the basic concepts of lymphography and to discuss some of the clinical applications of this procedure.

Methods

The method of lymphography to be described here applies to both upper and lower extremities. One-half to one milliliter of a mixture containing equal parts of Evans Blue Dye and 1% procaine hydrochloride is injected intradermally and subdermally into the interdigital web space between the first and second fingers or toes. The blue dye is selectively absorbed by the lymphatics which become visible within 10 to 15 minutes. A small transverse incision is made proximal to the injection site and a lymphatic vessel, under the superficial fascia, containing the dye is isolated. An untied 5.0 silk ligature is placed around the vessel proximally to distend it temporarily. A narrow gauge needle (26 or 27) which has previously been fitted to a polyethylene tube, is then cannulated into the vessel and secured in place by tying the ligature. Ethiodol (an ethyl ester of poppyseed oil containing 37% iodine) is injected under low constant pressure by means of a special injector apparatus, which is manually operated (Fig. 1). The contrast material is thus slowly forced into the lymphatic system, over a period of one or one and a half hours at a rate of approximately 6-7 cc of ethiodol per hour. Undue pressure may cause extravasation of the contrast material into the soft tissues of the extremity. We generally use 3-5 cc of ethiodol in the upper extremity and 8-10 cc in the lower extremity, not exceeding a total of 20 cc if both legs are injected. These amounts are reduced in children and small persons.

At the completion of the injection, appropriate films are taken immediately for the demonstration of the radiopaque lymphatic channels. When the lower extremities are injected films are taken of the legs, pelvis, abdomen and an AP view of the chest.

If there is no obstruction, contrast material leaves the lymphatic vessels in one to two hours after the completion of the injection.

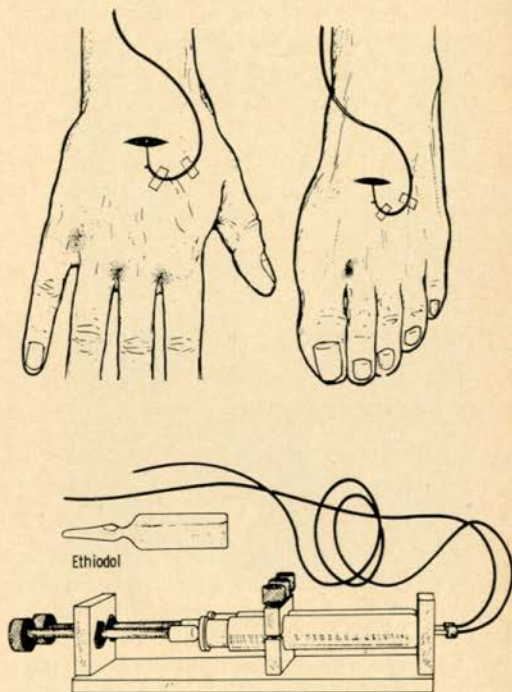


Fig. 1. Apparatus and sites of injection.

Injection in the feet will demonstrate the inguinal, iliac and abdominal retroperitoneal nodes. The thoracic duct is usually visualized on the early films, and the left clavicular nodes may also be seen. In order to demonstrate the popliteal nodes and the deep lymphatics of the lower extremity the injection is made in the lateral malleolus area. The axillary and clavicular nodes are seen after injection of the lymphatic vessels of the dorsum of the hand.

Although the total duration of the lymphatic study in both extremities takes from one to two hours, the ethiodol has been found to remain in the lymph nodes for periods of four to nine months, thereby permitting follow-up examination by serial X-ray films of the lymph nodes. Vena cavography has been a valuable adjunct to demonstrate, and to localize, lymph nodes above the cisterna chyli.

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Clinical Material

Lymphangiograms were performed on 84 patients suffering from different types of malignancies. The majority of these were performed at the Gastric and Mixed Tumor Services of the Memorial Hospital for Cancer and Allied Disease, New York and a few also in the Halifax Infirmary. One hundred and forty-two extremities were injected; 127 in the lower and 15 in the upper extremity. In two patients injections were attempted in lymphatics of the chest wall, but in only one were the lymphatics demonstrated by lymphangiography. (Table I).

Table I

Disease	No Cases
Lymphoma	27
Melanoma	21
Carcinoma	13
Sarcoma	9
Leukemia	1
Wilm's tumor	2
Edema of extremity	4
Diagnostic	3
Lymphangiography on trunk-(chest)	4
TOTAL	84

Results

A. Lymphatic vessels

i. Normal lymphatics

In the early films the lymphatic vessels are visualized; these parallel the veins and usually 2, 3 or more trunks are demonstrated in the extremity. The valves are well seen and at times gives a beaded appearance. In the upper extremity the normal lymphatics are finer than those of the lower extremity. Two groups of lymphatics, a lateral and a medial group, can be distinguished in the upper extremity. Both groups follow the basilic vein and traverse the inner aspect of the arm to the axillary nodes. The epitrochlear nodes may be demonstrated by the injection of the lymphatics over the lateral dorsal aspect of the hand.

In the distal part of the lower extremity the lymphatics are of fine caliber. They follow the greater and short saphenous veins and drain into the inguinal nodes. As they enter the pelvis and continue through the para-aortic nodes into the thoracic duct, they increase in size. (Fig. 2).

ii. Abnormal lymphatics

Partial lymphatic obstruction or lymph stasis is shown by dilated tortuous vessels. On the other hand if the lymphatic channel is completely blocked or surgically interrupted, the lymphatic vessel may be one of many sprays of fine radiating dermal vessels.

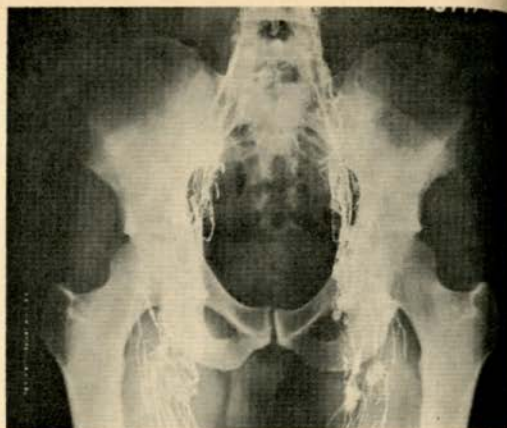


Fig. 2. Normal lymphogram immediately after procedure.

Lymphography is of value not only in differentiating primary from secondary edema, but also in showing neoplastic involvement of the lymph nodes. Unilateral lymphedema of the leg may be the initial manifestation of an otherwise asymptomatic malignant neoplasm arising in the pelvis. This phenomenon was seen in two patients. It may be due to neoplastic invasion of the lymph nodes or pressure from the bulky tumour. The lymphangiographic appearance may be one of dermal radicular sprays and filling defects or poor filling of the pelvic lymph nodes.

B. Lymph Nodes

i. Normal lymph nodes

The average normal lymph node is globular or elongated, measuring from less than one centimeter to five centimeters in length. Width usually does not exceed one centimeter; the larger nodes thus are always slender. (Fig. 3). The node is usually dense, homogeneous and finely reticulated. Alterations in this regular pattern are indicative of some type of abnormality. In the inguinal or axillary region, however, the frequency of inflammatory changes is so high that some degree of alteration of the nodes may still be considered to be within the limits of normal. Such nodes may often measure three or more centimeters in diameter. They are coarsely reticulated or granulated, often with a large central tear-shaped radiolucency. We have seen this many times. Sometimes there may be some retention of small amounts of ethiodol in the afferent lymphatics, a sign of partial obstructions.

ii. Lymphadenitis

Lymphography often enables differentiation of inflammation from neoplastic involvement. Inflammatory changes may produce an increase in



Fig. 3. Normal lymphogram 24 hrs. after injection.

size of the node, and coarsening of the reticulated pattern, but the contour of the gland is regular and intact.

iii. Metastatic Carcinoma

Large, irregular filling defects usually eccentrically located, eroding the outline of the node almost certainly represent deposits of carcinoma in the node. These defects occasionally give a "moth-eaten" appearance to the node. When metastasis is total, one sees a pattern of filling defects associated with dilatation of the afferent lymphatics and absence of the efferent lymph vessels. In partial metastatic replacement of the node, the efferent lymphatics can still be seen.



Fig. 4. Reticulum celled sarcoma.

iv. Lymphomas

While carcinomatous involvement of the lymph node may present as the above described "moth-eaten" appearance with some disruption of the peripheral contour, lymphosarcoma and other malignant lymphomas are represented by an entirely different radiographic pattern. In these diseases where the lymph node is completely involved with the lymphosarcoma, there is rarely any evidence of lymphatic vessel obstruction but uniform rather pale filling of the



Fig. 5. Hodgkins Disease.

entire lymph node parenchyma. The nodes are considerably enlarged and have a coarsely reticulated, foamy pattern or lacy radiographic appearance. A highly important differential feature is that in both lymphosarcoma and reticulum cell sarcoma, the peripheral margins are maintained. In Hodgkin's disease, although the nodal structure has the same pattern as lymphosarcoma, there may be areas of scattered punched out defects within the body of the lymph node.

v. Leukaemia

In leukaemia, the lymph nodes are granular rather than reticular and are considerably enlarged.

Clinical Applications

1. Evaluation of the extent of lymphomatous diseases^{4,5}

Lymphography may be of considerable help in evaluation of patients with lymphosarcoma. It can reveal previously undetected retroperitoneal disease as well as the extent of regional nodal

disease. On the other hand, when on clinical grounds, the lymphomatous disease appears to be generalized, lymphography may reveal some areas to be free of disease. In thus differentiating local versus generalized disease, the plan of therapy may be modified to a concentrated local approach or to generalized treatment as the situation may dictate.

2. Lymphography in radiation therapy^{4,5}

Lymphography can be helpful for more accurate direction of radiation therapy. Since the contrast material may remain in the abnormal lymph nodes for many months, the response of the disease to treatment can be readily evaluated by subsequent or serial X-rays.

3. Lymphography in chemotherapy

In diffuse or recurrent malignant disease, the preferred treatment is often chemotherapy. In these cases, lymphography can demonstrate the extent of the disease and subsequent X-rays may enable the response to be assessed.

4. Lymphography in surgery of malignant lesions^{1,3,6,7}

Lymphography can demonstrate the extent of the disease into the regional nodes, particularly in deep-seated areas inaccessible to clinical examination. A pre-operative knowledge of the extent of malignant disease can aid the surgeon in his management of the patient, influencing his decision whether or not to perform a radical lymphadenectomy after removal of the primary tumour. Lymphangiograms taken both before and after surgery may be useful to assure complete nodal removal and will enable the surgeon to evaluate critically his operative technique and correct any errors or deficiencies.

5. Lymphography in anatomical sites other than the extremities

The thoracic duct may be readily outlined by using lymphography with the dye injected into the lymphatic channels of the lower extremity. This may be of value in post-traumatic injuries to the thoracic duct and as an aid to localize a fistula of the thoracic duct.

6. Lymphography as a diagnostic method⁸

Another practical application of lymphography is its use as a diagnostic tool in investigating patients with fever of unknown origin, back pain or other symptoms. Three such patients were encountered in our series; in two of them lymphography revealed retroperitoneal lymphoma.

In cases of edema of the extremities, lymphangiography alone or in conjunction with venography may determine the etiology of the edema and may direct the preferred type of treatment.

Complications

We have encountered infrequent and minor complications in our series.

1. Local wound infection

Under appropriate aseptic technique the incidence of wound infection is negligible. We have, however, noticed some delayed healing of the incision, presumably due to foreign body reaction. Mechanical cleansing of the incision with normal saline before suture of the skin reduces the incidence of this complication.

2. Pain may be noted at the time of injection of the contrast material in the ankle and calf. This may be prevented by injecting the material more slowly.

3. Allergic reactions

We have encountered no classical generalized allergic reactions. In one woman with generalized lymphosarcoma there was an acute and sudden inflammatory enlargement of the inguinal nodes bilaterally. It was our impression that this was a chemical reaction to the contrast material.

4. Pulmonary complications⁸

Fat embolism of the pulmonary circulation due to the contrast material entering the general circulation via the thoracic duct and the left subclavian vein is a theoretical danger. In four patients (two adults and two children) we have observed a clinical pattern resembling lipoid pneumonia developing within 24 hours of the injection, consisting of fever, dry cough and malaise. Chest X-rays showed bilateral diffuse pulmonary infiltration. The fever and other symptoms subsided after two or three days. After one week the chest films were normal.

Due to the danger of severe pulmonary complications the procedure may be contra-indicated in patients who have had previous pulmonary irradiation or who suffer from extensive pulmonary disease.

Conclusion

Techniques and basic characteristics of lymphography are presented. Primary or metastatic diseases of the lymphatic system may be demonstrated by using this method. Clinical applications of lymphography in lymphomatous diseases, in surgery, in radiotherapy and in chemotherapy are discussed. Occasional minor complications have occurred. The procedure has practical diagnostic applications as well as a rôle in directing and evaluating any treatment. □

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Torsion of the Testis

F. J. BARTON, M.D., F.A.C.S.*

Introduction

My personal experience with five cases of this infrequently recorded condition led me to a review of the literature and an examination of the cases in the Halifax area in the past 10 years. I learned from this review that this entity is frequently not recognized early enough to avoid testicular infarction. One discovers that the reported incidence of necrosis of the testicle varies from 40-80% in various series. A plea is made for early recognition and immediate treatment.

Review of the Literature

The following points were noted after a review of the references noted below:

1. Incidence: Only 515 cases were reported up until 1951¹.
2. Age: Cases are reported in the newborn² and as late as 33 years of age, with the commonest incidence among adolescents.
3. A surprising percentage of reported cases were late in receiving treatment because the initial clinical judgment was faulty. For instance, repeated examples of hot compresses on the basis of an inflammatory lesion.

Review of Case Records

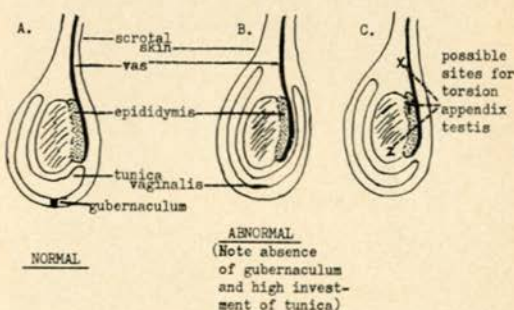
The records of the Halifax Infirmary, Victoria General Hospital and Children's Hospital were reviewed for the past ten years, with the following observations noted:

1. Total cases 25 - of which 4 involved the appendix testis only.
2. The salvage rate of the testicle varied from 14/35 (40%) in the hospital with the largest series, to 4/5 (80%) in the smallest series.
3. Again, the cases where the testicle was spared were recognized early and underwent immediate surgery.
4. In the remainder, where orchietomy was required, there was a delay of from 12 hours to several days between the onset of symptoms and surgery. Most of these

were treated expectantly at the outset, with local heat and pain-relieving drugs.

My personal experience, with 5 cases in a 14 year period, included 4 cases diagnosed and treated early enough to save the testicle - an 80% salvage rate. The remaining case in a 2-year-old had been treated symptomatically for 24 hours before he was first seen by a doctor. Of added interest in this case is the fact that I had operated on his father 9 years before (when he was 14) for the same condition, within three hours of the onset of symptoms, before serious compromise of the testicle had taken place.

**Pathological Anatomy



The anatomical defect, predisposing to torsion, is illustrated in diagram B. It is noted that the essential features are (a) a high investment of the tunical vaginalis over the posterior surface of the testicle, virtually surrounding it, thus precluding areolar fixation to the scrotal wall and allowing for undue mobility and (b) absence of the gubernacular ligament, which provides fixation to the scrotal floor.

It should be noted here that the presence of an appendix testis in one of the three possible areas noted in diagram (C) provides for the associated entity of torsion of the appendix testis, which frequently defies distinction from testicular torsion.

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**Diagrams copied from Guthrie Clinic Bulletin Vol. 33 - 44-7 July, 1963. (Diagrams after Nagle.)

Experimental work has been done on dogs⁴ to correlate the amount of testicular damage with the degree of torsion of the cord. Specifically, the work indicates that the length of time the testicle remains viable in the presence of torsion will vary from a 6 hour limit in a 1000° torsion (3-4 turns) to 7 days with a 90° twist - i.e. with 1/4 turn.

Clinical Features

There are three types of presentation -

- (a) the acute
- (b) The sub-acute
- (c) Recurrent relapsing type.

A typical acute case would be a 12-year-old, previously healthy normal boy, who is suddenly stricken either during his sleep or following exercise, with a persistent excruciating pain in the testicular area, accompanied by acute tenderness and early development of overlying scrotal edema. This type may run a very painful unremitting course on to testicular infarction within a matter of hours (some authors claim a 6 hour limit).

The sub-acute type has a less dramatic presentation, with the same symptoms and signs, but allowing more time - hours to a few days - for recognition or treatment.

The recurrent relapsing type consists of attacks of torsion followed by spontaneous detorsion, sparing the testicle until a permanent twist takes place, demanding immediate relief. This type frequently calls for a diagnosis based on a carefully taken history, thus reaching a judgment that early surgical treatment is indicated to avoid further attacks.

Differential Diagnosis

- (a) Inflammatory conditions.
- (b) Other surgical conditions.

One should be able to exclude very readily the only other non-surgical condition that is frequently confused with torsion. Orchitis and/or epididymitis have prodromal features, are less dramatic in presentation, and are associated with urinary tract symptoms, urine changes, or a history of mumps.

Other surgical conditions, such as acute hydrocele and incarcerated inguinal hernia, are

more insidious in onset. There is usually a history of previous swelling, and the physical signs are usually distinctive to those particular conditions. Since these are surgical conditions in any case, requiring urgent management, there is no real problem in that at exploration the lesion will be identified and dealt with accordingly.

Management:

Immediate surgery is mandatory in the acute and sub-acute varieties to insure a high testicular salvage rate. Elective surgery is indicated in the recurrent variety.

The procedure is relatively simple⁵; untwisting of the cord after dividing the parietal tunica, followed by excision of the tunica, as in the standard hydrocele operation, and then fixation of the testicle to the scrotal wall with a few sutures. Most authors also advocate prophylactic fixation of the opposite testicle at the same time. As to the management of the compromised testicle - if the testicle is frankly necrotic, orchietomy is the general rule. However, one author advocates leaving it behind for psychological reasons².

If one finds a torsion of the appendix testis on exploration, simple removal of the already compromised appendix is usually all that is necessary.

Finally, if in doubt, exploration is indicated.

Summary

A review of the experience with torsion of the testicle indicates that while it is a relatively uncommon condition, it frequently goes unrecognized and is improperly managed.

Most doctors, in general or surgical practice, may well be called upon to deal with this condition at some time and there remains the challenge of immediate recognition, followed by prompt surgical management. It is now generally accepted that when the affected testicle is operated upon, the opposite one is fixed at the same sitting. □

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Malignant Lymphoma of the Cervix (from page 72)

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Farmer's Lung

CHARLES A. GORDON, M.D.*

E. E. HENDERSON, M.D.**

Farmer's Lung is an occupational disease which occurs in certain persons exposed to the dust of mouldy hay. The disorder is occasionally recognized by physicians who care for farm workers in Nova Scotia. It is probable that the incidence is higher following a haying season during which there has been heavy rainfall. If the hay is stored damp, moulds will grow on it. Although the individual susceptibility varies widely, only a few farmers develop symptoms to a disabling degree. In those susceptible, the severity of the reaction increases with repeated exposure, until finally limited exposure may provoke severe pulmonary symptoms. The symptoms occur only during the winter and spring months when cattle are fed in the barns and heavy concentrations of "hay dust" are formed in the air.

The pulmonary symptoms may not be evident until several hours after exposure and may not reach maximal severity until that evening or night. This allows a susceptible person to sometimes have heavy exposure without warning. Shortness of breath without wheezing is the most common symptom. This is sometimes quite severe. Cough with white or yellowish sputum is present. Pyrexial bouts with chills and drenching sweats occur. With repeated attacks, weight loss is noted. Cyanosis is frequently observed. Examination of the chest at this stage reveals the presence of moist rales throughout both lung fields. The X-ray appearance usually consists of varying amounts of diffuse nodulation, increasing with the frequency of attacks, and eventually showing a diffuse pulmonary fibrosis. Hilar adenopathy is absent. Remission of attacks will be spontaneous on withdrawal from exposure.

Case Histories

Three subjects with this disorder were seen in 1960. The following summary of the histories illustrates many typical features on which the diagnosis should be suspected.

Case I was a 24-year old Cape Breton farmer whose duties included feeding hay to the cattle. Early in December he developed marked shortness of breath, cough with small amounts of yellowish sputum, fevers to 103 degrees at night, associated with drenching sweats and began to lose weight rapidly. The family doctor noted rales through-

out both lung fields; suspecting pneumonitis he confined him to bed at home for a period of two weeks, and administered broad spectrum antibiotics. After five days the patient was asymptomatic and in two weeks returned to his former duties, pitching hay and feeding the cattle. The symptoms returned promptly and he was hospitalized, where chest X-ray was noted to be abnormal but non-specific. He again improved rapidly and was discharged with the tentative diagnosis of bronchopneumonia.

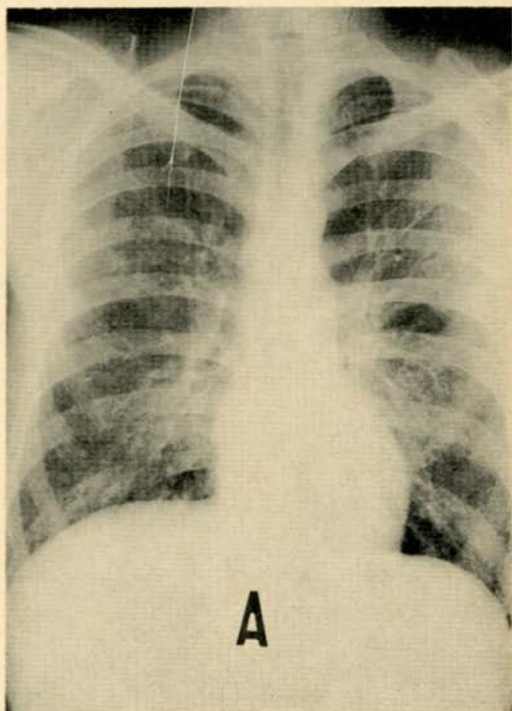


Figure A1 - P.A. Chest X-ray of Case 1 showing a diffuse nodularity throughout both lungs without hilar involvement.

He recuperated at home for approximately one month, before he began pitching hay and feeding the cattle. Promptly, shortness of breath, cough, sputum, with evening fevers and drenching sweats returned. He stopped work, rested at home and all the symptoms subsided without drug therapy.

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Six weeks later he started to feed the cattle again with the prompt return of all his symptoms including a temperature to 104 degrees. Eight days following the onset of this attack, he was hospitalized in Halifax, where on admission he was afebrile, but complained of shortness of breath and cough. Physical examination revealed inspiratory rales throughout both lung fields. Hematological and bacteriological studies were normal. Arterial blood gas on ambient air gave a normal pH and pCO_2 with arterial oxygen saturation of 89.3%. Chest X-ray (Figure A.1) revealed diffuse fine nodularities throughout both lung fields without hilar involvement. These findings made the diagnosis of Farmer's Lung quite apparent. However an open lung biopsy was done. The tissue showed a diffuse interstitial infiltration of lymphocytes and macrophages with some fibrosis. There were perivascular and peribronchial granulomata composed of giant cells and mononuclear cells. There was no evidence of caseation. The pathologist felt that these changes were compatible with the granulomata produced in Farmer's Lung.

His convalescence was uneventful and on recommendation changed his position to work in the automotive trade. He has been well ever since. Figure A.2 shows the chest X-ray nine months later with complete disappearance of the nodularities.

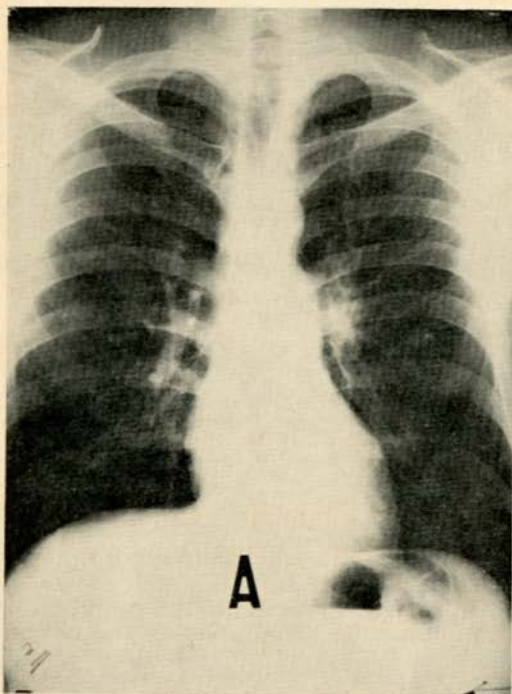


Figure A2 - P.A. Chest X-ray 9 months later with disappearance of the nodularity.

Case II This is the father of the 24-year old farmer mentioned above. For a number of years, he had suffered from respiratory symptoms and for the last few years was chronically short of breath. He had been treated for bronchitis and pneumonia on several occasions and an X-ray of his chest showed considerable fibrosis and nodular changes. Because he had worked for two years in the early 1930's as a hard rock miner in Ontario, he was erroneously informed that he was suffering from silicosis. This diagnosis was rejected by the Workmen's Compensation Board of Ontario because of a lack of sufficient exposure to silica dust.

When the son was ill the father had taken on the feeding chores. He promptly developed shortness of breath, high fever, cough and sputum, typical of his son's illness. The family physician was called and found that he was moderately cyanosed, febrile and had a tachycardia. X-rays showed an increase in the number of diffuse nodularities throughout both lung fields in comparison with the previous films on file. This history and radiological findings are in keeping with repeated acute bouts of Farmer's Lung which have produced pulmonary fibrosis.

Case III This was a 52-year old Annapolis Valley farmer whose family physician was called to see him with acute pulmonary symptoms of marked shortness of breath, with cyanosis and high fever. The doctor recognized the disorder as Farmer's Lung. He prescribed bed rest at home without specific therapy. The symptoms abated in five days. He was advised not to handle mouldy hay. Labour was not available and as the cattle needed attention, he went back to his former farm chores. He persisted in feeding the cattle in spite of a prompt return of symptoms. He began losing weight, was markedly short of breath, ran a high fever and carried on until he was physically unable to work any longer. The family doctor found him to be extremely dyspnoeic, cyanotic and wasted. He was admitted to hospital for further treatment. On admission his temperature was 103.4 degrees, pulse 124 per minute and the respiratory rate was 36 per minute. There was extreme dyspnoea at rest and marked cyanosis. No clubbing or abnormal venous distention was detected. He was perspiring freely. Moist rales were heard throughout both lung fields. Arterial blood gas on ambient air showed a pH of 7.49, pCO_2 of 28 mms. of mercury and arterial oxygen saturation of 61.5%. The chest X-ray (Figure B1) was grossly abnormal, with generalized nodular infiltration throughout both lung fields, more so on the right side.

He was placed on nasal oxygen and given crystalline penicillin. The patient continued his pyrexial course and on the fifth day of hospitalization he had not improved. Prednisone 10 mgm.

every eight hours was started and within 36 hours of the institution of this therapy, the patient's temperature was normal and the pulse rate had dropped to 72 per minute. During the next week his dyspnoea lessened and a repeat arterial blood gas showed the pH to be 7.43, pCO_2 42.88 mms. of mercury and arterial oxygen saturation was 96.6%. Spirometric values showed a slight reduction in the mechanics of breathing and the chest X-ray was markedly improved. He was observed for another two weeks then discharged to his home with the advice that he should avoid the dust of mouldy hay. He still complained of some shortness of breath but was otherwise asymptomatic.

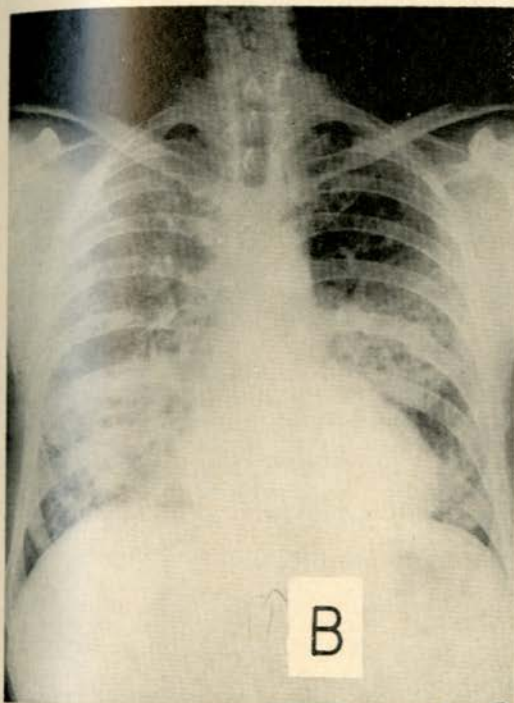


Figure B1 - P.A. Chest film of Case 3 showing extensive nodular infiltration, more extensive on the right side, and an old healed fracture of the 7th rib posteriorly on the left.

An important feature of this case is that this farmer returned to his former chores during the summer, made hay as usual and fed his cattle throughout the winter months until about the first of March 1961 when his new hay supply was exhausted. He once again resorted to the use of left-over hay from the 1959 haying season. Within twenty-four hours he noticed a marked increase in shortness of breath and developed a cough, headache and fever. He remembered the previous warning, discontinued feeding the cattle and within a week was feeling normal again except for some persistent dyspnoea. He was seen as an

out-patient. The chest X-ray showed a minimal degree of fibrosis throughout both lung fields. Full blood picture, total eosinophile count, blood chemistry, were all normal. Pulmonary function studies revealed normal lung volumes, slight reduction in the mechanics of breathing and a definite impairment of alveolocapillary diffusion as measured at rest with the steady state carbon monoxide method. The diffusion defect explained his sensation of dyspnoea.

Discussion

The three cases presented had repeated exposures to mouldy hay which was harvested during the previous summer. The patients stated that

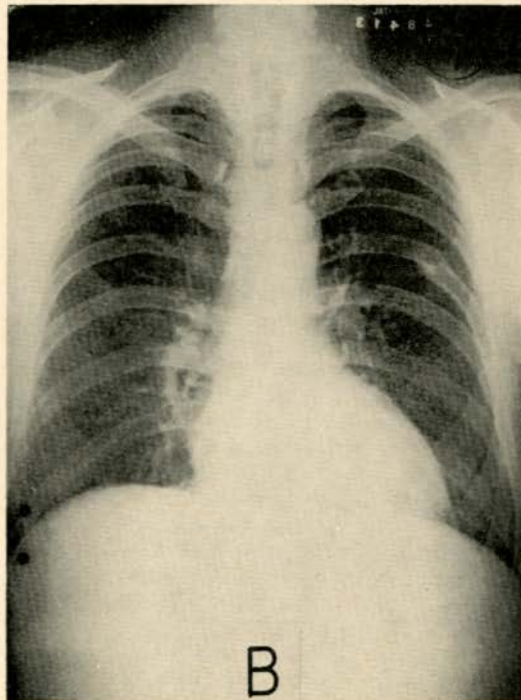


Figure B2 - One year later showing complete resolution of the dense nodularity and a slight diffuse fibrosis.

they were forced to store damp hay because of the unusually heavy rainfall that season. The delayed onset of acute symptoms were similar - shortness of breath, cough with sputum, pyrexial bouts with chills and drenching sweats and weight loss. All had evidence of hypoxia and rales throughout both lungs. All improved on removal from exposure. The X-rays showed varying amounts of diffuse nodular shadowing and the two cases with longer histories of exposure developed fibrotic changes. These findings are sufficient to make a firm diagnosis of Farmer's Lung without need of biopsy.

The etiology is not definitely established. When first described in 1932 by Campbell¹ it was attributed to white "hay dust". In 1936 Fawcett² described the X-ray appearance and called the condition "bronchomycosis feniseiorum". This suggested a mycotic cause. Other reporters, including Tornell³, Saucheray⁴, and Zettergren⁵ favoured fungi as the etiological agent but the information provided was not conclusive.

Samples of both the 1959 and 1960 hay used by patient 3 in the above series were put on culture at the Bacteriology Department at Camp Hill Hospital. Well over 100 various organisms were cultured in both types of hay and it was impossible to conclude that any particular organisms were responsible for the symptoms. Pepys and his co-workers⁶ have demonstrated antigens in extracts of mouldy hay which reacted to 80% of the sera from patients with Farmer's Lung. Williams⁷ brought on acute attacks following the inhalation of mouldy hay dust. The inhalant was an aerosol of watersoluble, Seitz-filtered extract of mouldy hay. He suggested that inhalation tests with this extract would be of value in the diagnosis of Farmer's Lung.

The association of this disorder with fungi appears evident. Towey⁸ reported 35 patients with findings not unlike Farmer's Lung after exposure to spores of *Coniosporum corticale* in workers removing maple bark. Bringhurst and co-workers⁹ report 16 patients with this type of pulmonary disorder in workers handling compost heaps for the growth of mushrooms. Rundle¹⁰ described a patient with similar symptoms who was exposed to mouldy sawdust stored in his basement. The sawdust was stored in a damp bin all summer and the patient developed similar symptoms to those described with Farmer's Lung when he started to burn it in his furnace in the autumn.

Pulmonary function studies have shown primarily that there is hypoxia and a low diffusing capacity. Williams¹¹ reports that patients with persistent dyspnoea after recovery from the acute illness had little derangement of ventilatory function and no evidence of airway obstruction but showed a low diffusing capacity of the "alveolo-capillary block" type.

Summary

Farmer's Lung is caused by the inhalation of dust from mouldy hay as described in the three cases presented.

Some hay was stored damp and became mouldy that season because of unusually heavy rainfall.

The onset of symptoms was delayed several hours after exposure to the dust, allowing the individual to have a heavy exposure without warning.

Symptoms were very similar - shortness of breath, cough, sputum, pyrexia, chills and drenching sweats.

Numerous rales were heard throughout both lungs and varying amounts of cyanosis was observed. Hypoxemia without evidence of acid-base disorder was shown with arterial blood gas studies. A low diffusing capacity was also demonstrated.

The radiological pictures of the acute episodes were characterized by diffuse small nodularities throughout both lungs without hilar involvement. As a result of many attacks, pulmonary fibrosis developed.

Symptoms abated on withdrawal from exposure to haydust. The improvement appeared accelerated by the administration of corticosteroids in one instance.

Although a failure to identify any specific organism on hay culture occurred, evidence presented by various authors makes the association with some form of fungal growth apparent. □

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Hemoglobinometry Using Semi-Automatic Apparatus

IAN D. MAXWELL, M.B., CH.B.*

Increased demands for laboratory tests have gone hand in hand with a desire by laboratory workers for greater precision of results. These two trends, of course, though not mutually exclusive are in opposite directions. Fortunately they can be resolved somewhat by the employment of modern semi-automatic equipment.

At first sight one could hardly conceive of a simpler test than the estimation of hemoglobin. A measured sample of blood is diluted to a standard degree and the colour is noted. Surely anyone can do this? Surely it takes only a moment?

There are problems though. Blood consists of cells temporarily suspended in plasma; the sicker the patient the more temporary this association. In a busy laboratory when a large number of specimens are to be examined it is essential to use a continuously rotating mixer to avoid sedimentation artefacts, the specimens being withdrawn only as they are to be sampled. Sampled how? How accurate is the measured sample? Often not as accurate as one would wish. The calibration of laboratory glassware is seldom a problem but even pipettes meeting Bureau of Standards specifications may be, and often are, imperfectly cleansed or dried or may be used inaccurately. And there is the diluent. How accurately is this measured?

Measurement of Blood Samples

Late in 1963 at the Halifax Infirmary we became concerned about these variables and decided to investigate them. At that time routine blood samples were measured in one of a number of 20 cu. mm. hemoglobin pipettes and diluted by the measured discharge from a spring-loaded syringe. (B. D. Cornwall CONTINUOUS PIPETTING OUTFIT). The blood pipettes were rinsed but not dried between successive blood samples. To assess the variability of this procedure blood samples hemolysed to avoid any sedimentation errors were examined by replicate analysis. All tests were carried out by the same observer.

Series I consisted of 20 samplings of the same blood by a single 20 cu. mm. pipette cleaned meticulously and dried between each sample.

Series II was 40 paired estimations of another blood sample with 40 different pipettes the first member of each pair being measured with a clean dry pipette and the second with the same pipette

rinsed and blotted dry. In all then, 100 estimations were made. The results are shown in Table I.

This may be summarized as follows:

- Combined instrumental and technical errors using the same pipette..... ± 0.2 gms. per 100 ml.
- Calibration error of the 40 pipettes when used correctly in the dry state exclusive of the random errors in (a)..... ± 0.3 gms. per 100 ml.
- Constant mean error due to the use of wet pipettes..... $- 0.4$ gms. per 100 ml.
- Calibration error due to the use of a wet pipette..... ± 0.5 gms. per 100 ml.

The mean low value referred to in (c) is highly significant (P less than 0.001).

Table I

	SERIES I (Blood 1)	SERIES II (Blood 2)	
Pipette	Same throughout	40 different pipettes	
State	Dry	A) Dry	B) Wet
Mean Hgb	gm. % 12.3	gm. % 13.6	gm. % 13.2
S.D.	0.11	0.24	0.36
Range	± 0.2	± 0.5	± 0.7
		Mean _A - Mean _B 0.4 gm. Significance P = > 0.001	

This disturbing lack of precision unless the same cleaned and dried pipette is used for all hemoglobin estimations - clearly an impossible requirement in a laboratory where 80 - 100 blood samples are being examined daily - prompted us to investigate the use of the AUTODILUTOR, a semi-automatic diluting pipette in which a vacuum operated syringe draws a measured volume of

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blood into a micropipette. This is subsequently rinsed out and diluted by the measured discharge of a second syringe, both syringes being operated by a single simple control. Aspiration and dilution of each specimen is effected in less than 10 seconds.

Results:

In the preliminary investigation of this instrument in our laboratory the means of two series of twenty replicate determination of hemoglobin differed by 0.1 gms. % (Series III 12.55 gms. %, Series IV 12.65 gms. %). The Standard Deviation

of the combined series of forty (S.D. = $\sqrt{\frac{\sum d^2}{n-1}}$) was 0.18 gms. % which compared very favourably with the use of a single pipette. (Table II). Accordingly the instrument was given an extended trial in actual operation.

Table II

Pipette	S.D.	Coefft. Variation	Precision Ratio
Single dry Sahli	0.11 gm.	0.9%	1
40 dry Sahli	0.24 gm.	1.8%	2
40 wet Sahli	0.36 gm.	2.7%	3
Audodilutor	0.16 gm.	1.4%	1.6

All hemoglobin estimations henceforth were conducted in duplicate and a system of periodic control checks was set up (Appendix A). The behaviour of the instrument for some months was remarkably consistent and it seldom required adjustment. At first there were random variations due to the appearance of small air bubbles in the large syringe which developed on standing overnight and were cleared only with difficulty. These were no longer a problem when a surface-acting agent was added in a concentration of 1:10,000 to the Drabkin's diluent. In actual service, replicate checks (20 samples of the same blood) have showed coefficients of variability from 0.95% - 2.21% (Mean 1.48%) which is considered acceptable. Since September, however, cyclic discrepant readings have been encountered, alternating with runs of accurate readings and the instrument has been withdrawn from use until the cause of these has been ascertained.

Photometry

The spectrophotometer also may be a problem. Unnoticed changes in spectral grating adjustment on the one hand and soil, scratches, fingermarks or moisture in the cuvette on the other or unnoticed changes in zero or 100% readings and transcription errors in conversion of instrument readings to grams of hemoglobin are very real headaches.

After investigation of the relative merits of a number of instruments, the FISHER HEMOPHOTOMETER was selected for exhaustive study. This is a semiautomatic instrument which

employs a self emptying cuvette and has a pre-calibrated scale, reading directly in grams of hemoglobin per 100 ml.

The instrument appealed to us for several reasons.

1. **Rapidity of Action.** The galvanometer has an almost instantaneous response and it is particularly well damped. There is a single control, a two-position switch which activates the meter in one position and ejects the sample in the other. Filling, scanning and emptying of the cuvette takes less than 5 seconds.

2. **Abolition of cuvette errors.** The use of a single cuvette which does not need to be handled avoids the errors so commonly introduced in all other methods.

3. **Stability.** The instrument employs two balanced photocells and should therefore be little affected by fluctuations in mains voltage in contradistinction to single photocell instruments which are dependent on a stabilized power supply.

4. **Direct Reading.** By virtue of the logarithmic scale which reads directly in grams of hemoglobin, the hemoglobin values of individual specimens not only may be obtained more rapidly but mistakes in transcription are much less likely to occur as the usual conversion table is no longer necessary.

There is a common misapprehension amongst laboratory workers that filter photometers are basically inferior to spectrophotometers. For certain applications or if the instrument is to be used for a wide variety of tests at different wavelengths this possibly is true. If the instrument is being employed for one test only and the filter has a narrow band pass this objection no longer holds; in fact a good filter photometer is preferable to a spectrophotometer in rapidity of action and stability of readings.

Our survey of the FISHER HEMOPHOTOMETER included the following checks: linearity of response, band pass of filter, band pass of instrumental calibration standards, accuracy of scale readings, effects produced by different methods of filling the cuvette, by preceding or following specimens of high hemoglobin concentration with ones of low content and by variation of the line voltage.

Linearity of Response

This was checked repeatedly by preparing dilution curves from blood samples of widely differing hemoglobin contents. No matter what the initial content, the instrument behaved in an almost perfectly linear manner with no consistent tendency for high or low values at any part of the range. The linearity of response was compared with that of two spectrophotometers in our laboratory and two in another large laboratory in the

area. The two Coleman instruments had already been calibrated for hemoglobinometry. In the remaining uncalibrated instruments an arbitrary value has been taken for the hemoglobin level of the 100% sample. (Table III). None of these errors is a gross one, with the exception of the 75% reading for Coleman I. In this comparison the Fisher instrument appeared to be acceptable.

Table III

Dilution	Fisher	Unicam	B & L	Coleman Jr.	Coleman Jr.	"True" Value
	Hemophoto-Meter	S.P.600	Spectronic 20	I	II	
100%	19.5	(19.6)	19.6	19.7	19.6	19.6
75%	14.6	14.8	14.4	15.3	14.9	14.7
50%	9.7	9.85	9.8	10.1	10.2	9.8
25%	5.0	4.85	4.85	5.1	5.3	4.9

Accuracy

The FISHER HEMOPHOTOMETER differs from most other instruments in that the scale is expanded, only the portion representing optical densities between approximately 1.00 and 0.15 being shown. It cannot, therefore, be balanced by the usual method, namely setting the meter for 0% and 100% transmittance. Instead the two photocells are balanced by a mechanical shutter at an optical density approximately 0.5 (HI control), and the meter sensitivity is adjusted for standard deflection at a different hemoglobin level by means of a potentiometer (LO control). As an O.D. of 0.5 is somewhat above meter zero, adjustment of the "LO" control affects the deflection of the needle at the balance point; over-compensation at the low end of the scale with falsely low readings producing false elevation at the high end. This fact produces a very elegant internal control on the accuracy of the readings, the photocells being balanced both mechanically and electrically for two independent standard solutions. For correct adjustment, therefore, providing the two solutions are of widely different hemoglobin content it should be immaterial which control is used to balance the instrument and theoretically balance could be achieved by operating the "LO" control for the high standard and the "HI" control for the low standard. This proved to be the case. A series of primary standards were prepared from a standard cyanmethemoglobin solution received from the Laboratory of Hygiene, Ottawa and this was used to check the accuracy of the instrumental standards. This showed that a minor correction would be necessary for each of them and when this was applied, virtually perfect correlation was obtained at all levels of hemoglobin concentration. As detailed in Appendix B a system of regular checks has been applied, the instrumental standards being reviewed periodically for any change in O.D. and compared with Ottawa standards maintained in the refri-

erator. The Ottawa Standards themselves are compared from time to time with fresh standard cyanmethemoglobin sent out from the Laboratory of Hygiene. In the period under survey (some six months) there has been no change in the instrumental standards but slight degradation of the older Ottawa Standards.

Band Pass

Despite the fact that the artificial instrumental calibrating substandards are of a bluish pink colour quite unlike the reddish brown tint of cyanmethemoglobin, the absorption maxima of the two solutions within the green area of the spectrum are remarkably similar, namely 540 m μ . The peak band pass of the filter is some 15m μ lower than this absorption peak. (Fig. I). When questioned on this point the manufacturers state that the 525 filter was chosen because the usual 540 filter passes too much light in the near infra-red, a region to which the silicon photocells are very sensitive. The use of this lower wave

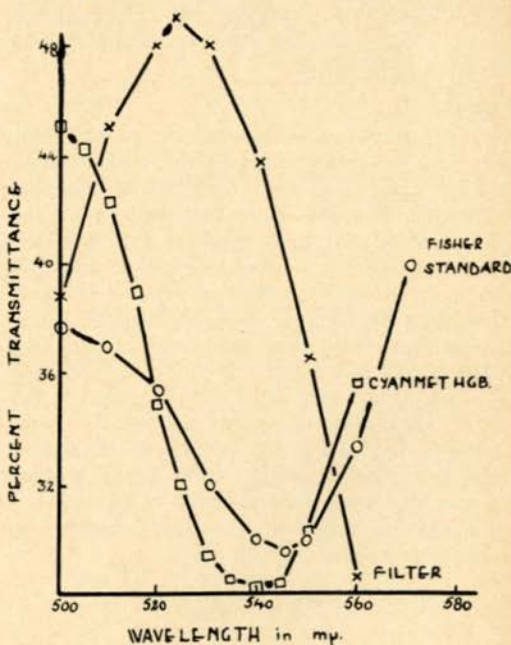


Fig. 1. Extinction Coefficients of Fisher Standard and Cyanmethemoglobin Compared with Band-Pass of Filter.

length caused us some concern at first but calibration curves for cyanmethemoglobin set up on the Unicam Spectrophotometer both at 525 m μ and 540 m μ showed no departure from the Beer-Lambert law at the lower wavelength.

Line Voltage

Operation of the instrument was virtually independent of variation of applied voltages between 85 and 135 volts. (Fig. II.) We had not expected so high a degree of compensation and as the maximum diurnal mains fluctuation in our hospital is 105 - 125 volts, there was clearly a wide safety factor.

Cuvette Filling

Readings were unaffected either by the method of filling the cuvette apart from sheer violence or by the order in which high and low value specimens were read.

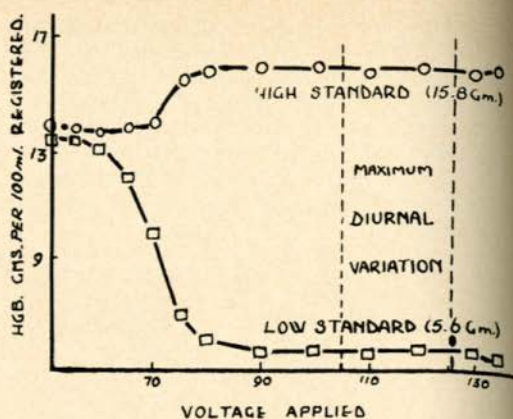


Fig. 2. Effects of Variation in Line Voltage on Response of Fisher Hemophotometer (Readings of Standards)

Table IV
Statistical Analysis of Results over Seven Month Period

Dates	Mean Hgb gms./100 ml.	Standard Deviation ± gms./100 ml.	Coefficient of variation %
Apr. 11 - 14	11.7	0.263	2.2
May 16 - 20	11.9	0.256	2.2
Aug. 29 - 30	10.8	0.232	2.2
Sept. 8 - 9	11.6	0.179	1.5
Oct. 1 - 2	11.8	0.304	2.5
Nov. 5 - 7	11.8	0.235	1.9
Nov. 17 (blind)	12.0	0.254	2.1

As all indications suggested that this was a reliable instrument it was adopted for routine use in April 1964 and a series of routine control checks was set up (Appendix B).

Results

All hemoglobin estimations since April 1964 have been performed in duplicate. Unfortunately those for June - July were inadvertently discarded but several thousand figures are available for the other months. At first whenever the difference between members of a pair was greater than 0.4 gms.% the estimation was repeated with two new blood samples. Simple statistical analysis would have predicted that this would result in repetition of one sample in ten and this proved too frequent to be practical. The limits were extended to 0.6 gms.% (i.e. ± 0.3 gms.% from the mean) encompassing all but 2 - 4% of the readings. Occasional widely discrepant readings have been obtained and although these were not used in reports they have been included in the statistical analysis in Table IV in which:

$$\text{Standard Deviation (S.D.)} = \sqrt{\frac{\sum d^2}{2n}}$$

$$\text{Coefficient of Variability (C.V.)} = \frac{100 \text{ SD}}{M}$$

where: d = difference between pairs

n = number of pairs

M = mean hemoglobin concentration of all samples studied over the period analysed, usually one or two days. The use of "non-blind" paired analyses for statistical purposes might be criticized because of the danger of bias. We have searched for this by comparing the means of the first set of figures with those of the second set of the pairs and have found no appreciable difference, one set sometimes being slightly larger or smaller in no consistent manner. This does not rule out bias but it suggests that it is not strongly operative. The only way bias can be excluded is by complete randomization of specimens at the time of estimation and this would not be warranted when the primary purpose of the estimation is to obtain accurate figures as possible for a routine report, particularly when the technicians are already over-worked.

In order to test the validity of our statistical conclusions only one of the set of duplicate dilutions for Nov. 17th was used as the basis of reporting for that day. The hemoglobin value of the second set of 50 tests was recorded at a different time by a different technician in a different book and the standard deviation of the series was compared with the standard deviations of the previous non-blind duplicates. In this study of course, the technicians were on their mettle, aware

that their results were being checked but bias was impossible as the two sets of values could not be compared. No difference is apparent.

Our results are compared with the published results of other workers in Table V.

Table V
Comparison of Halifax Infirmary Results with Other Reports

	Halifax Infirmary		Feichtmeir ⁽¹⁾		Dorsey ⁽²⁾	Young ⁽³⁾
	Multiple Replicates	Routine Duplicates	100 Duplicates	Routine	Routine	Routine
Standard Deviation (± gms. /100 ml)	0.125-0.180 (0.176)*	0.179-0.340 (0.269)*	0.166	0.301	0.06-0.30 (0.135)	0.275
Coefficient of variation (percent)	0.95-2.21 (1.48)*	0.5-2.5 (2.1)*	1.27	2.31	—	2.55

*Weighted Mean

APPENDIX A

AUTODILUTOR

Calibration of the relation of the two pipettes should be carried out daily with the standard hemolysate solution. Process this hemolysate as a routine specimen and record the hemoglobin content content in the Quality Control Book.

NOTE: Interpretation of these values is dependent on the Hemoglobinometer being in control.

Accurate calibration of the large and small pipettes should be carried out following the instructions below. Record the results in the Quality Control Book.

This is set to deliver 5.0 ml. and should be calibrated by discharging twenty times into a 100 ml. volumetric flask following the usual meticulous wiping technique employed when hemoglobin estimations are being actually carried out (i.e. wipe, fill, wipe, discharge). An overall error of 0.4 ml. (equivalent to 0.02 ml. per discharge) is the outer limit which is acceptable.

This may be estimated by marking the meniscus with a grease pencil and adding a further 0.4 ml. by means of a volumetric pipette, estimating by eye whether the error is greater or less than 0.4 ml.

This is set to contain 0.020 ml. and may be calibrated with a standard hemolysate or by gravimetric means. The latter is preferable as it does not introduce instrumental errors from outside. (e.g. Hemoglobinometer, concentration of hemolysate, random variations etc.).

1. Clamp the short tube leading from the control to the top of the large pipette.
2. Pour a small amount (circa 10 ml.) of Drabkin's Solution into a small beaker.
3. Aspirate sequentially into the pipette tip by operating the control as though it were a blood sample. (Note that the large pipette no longer contributes to the discharge.)
4. Wipe the tip in the usual manner and discharge into a tared flask twenty times. Meticulous wiping after each discharge is essential.

5. The twenty discharges should weigh within ± 0.002 gms. of 0.40 gms. which is equivalent to a maximum error per discharge of 0.0001 ml. (the specific gravity of Drabkin's solution may be disregarded.)

APPENDIX B

HEMOGLOBINOMETER

With this instrument as with no other, control of laboratory results is completely dependent on frequent calibration.

- A) Each set of estimations - Machine should be balanced with the high and low instrumental standards.
A sample of standard cyanmethemoglobin (Halifax Infirmary) should be included in each set of estimations.
- B) Weekly - i) Check of photocells and meter - Perform readings of the sealed Ottawa Standards in the Hematology refrigerator.
Specimens must be allowed to reach room temperature before readings are made. Record in Quality Control Book.
ii) Check of Flow Thru Cuvette - Pour one ampoule of Acuglobin into the cleaned cuvette. The reading should be within 0.2 gms. of the concentration marked on the vial. Record in the Quality Control Book.
- C) Monthly
i) Prepare fresh high and low Ottawa Standard as detailed.
ii) Check O.D. of high and low instrumental standards against a water blank in the Chemistry Coleman Jr. and record the readings and instrument number in the Quality Control Book. If there is any gross deviation from the previous readings the instrumental standards will need re-calibration and the sealed Standards in the refrigerator may need to be replaced. □

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Malignant Lymphoma of the Cervix

W. G. MOORES, M.D.*

The term "malignant lymphoma" is used to designate a group of malignant diseases associated with lymph nodes and the reticuloendothelial system. The classification of the malignant lymphomas into giant follicle type, reticulum-cell sarcoma, Hodgkin's disease and lymphosarcoma (lymphoblastic and lymphocytic types) is generally accepted. Difficulty arises in differentiating between lymphosarcoma and chronic lymphatic leukaemia in the late stages as a lymphosarcoma may present with a leukaemic blood picture; both involve the viscera and cannot be differentiated histologically.

Extra nodal involvement by malignant lymphoma is an unusual lesion. The literature indicates that both primary and secondary involvement of the female genital tract is extremely rare. To emphasize this, in 1952 Lucia reviewed 123 cases of malignant lymphoma; 33 of which were women and only one of these presented with gynecological complaints, namely a 27 year old woman whose presenting complaint was menorrhagia subsequently proven to be due to invasion of the endometrium by lymphoblasts. Johnson reports that of 43 females dying of malignant lymphoma at the Mayo Clinic over an 8 year period, 13 had pelvic involvement. None of the 13 patients presented with primary or secondary complaints referable to the lymphomatous involvement of the pelvis. He also reports on 5 cases of malignant lymphoma where involvement of the female genital system was the primary manifestation. One of the cases was a primary lymphosarcoma of the cervix and endometrium.

Case Report:

A 49 year old white female was admitted to the Halifax Infirmary on June 24th, 1963, complaining of irregular menstrual bleeding for 2 months duration. General physical examination was essentially negative, and no lymphopathy splenomegaly or hepatomegaly was present. On June 26th, 1963 an examination under anesthesia was performed and the cervix was found to be grossly distorted by a malignancy with extension

to the left side wall of the pelvis and along the uterosacral ligament. A nodule was found on the right vaginal wall just under the pubic ring. Both lesions were biopsied and a diagnosis of malignant lymphoma - mild lymphocyte reticulocytic type partly follicular was made.

Investigations:

1. Chest X-ray and metastatic series showed no evidence of disease.
2. I.V.P. Bilateral displacement of both ureters with a defect in the base of the bladder suggestive of parametrial involvement.
3. Bone marrow - Normal haemopathic picture.
4. Range of haematological findings from June 24th to July 31st, 1963. WBC * 6,333 - 4,190; Hb - 12.8 - 11.3 gm% platelet count - 175,000 - 200,000 per mm.³
5. Papanicolaou smear - Dec. 20th, 1963 - Class II - Chronic Cervicitis.

Treatment:

The patient received a course of deep X-ray therapy to the pelvis, To: 2000 r; MSD: 3000 r. There was a resolution of the primary tumour and the secondary pelvic infiltration. She has been followed monthly since that time without any sign recurrence or generalized disease.

Comments and Conclusions:

Malignant Lymphoma is extremely rare in the cervix probably as a direct result of lack of lymphoid tissue in this area. Presumably it arises from the occasional germinal lymphoid follicles found in the cervix. There is the possibility that this tumour may have been an undifferentiated adenocarcinoma of the cervix, however the dramatic response to relatively small dosage of radiation seems to indicate that this was malignant lymphoma.

At present there is no sign of recurrence, however the prognosis is guarded as generalized disease may develop.

References see page 62.

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Appreciations

Malcolm Robertson Elliott

There are opportunities that come to one, "Once in a life-time". And such is the honor of expressing an appreciation of the life and characteristics of the late Dr. Malcolm Robertson Elliott.

Dr. Elliott, the Physician and Man, was the Pattern, that we all wish that we could be; - Dedicated to the fine principles of our Profession and inspired by a desire to contribute his utmost, to Community Service and the Christian way of life.

Of Empire Loyalist stock, he was strengthened and supported in his daily tasks by a devoted wife Jean, son Robbins and daughter Shirley.

It was my great privilege to have worked with him, in the field of General Practice, in the Wolfville-Kentville area, for ten years, following the First World War, and then a long association after, until his death, this Fall.

To him God gave the admirable qualities of Patience, Tolerance, considered judgment, kindness and a calm and gentle Dignity.

He was born to his Calling, he had the Grace-Modesty and natural Intuition of the Great Physician. And I say unhesitatingly - At the bedside - he had no peer, amongst his associates, as a Healer and Counsellor.

To the Provincial Medical Board, to the Chairmanship of the Board of Governors of Acadia University, to the Town of Wolfville, The Children's Aid Society and the Eastern Kings Memorial Hospital; which he loved so much - This Harvard trained man gave unstintingly of his time and energy.

Malcolm Elliott was truly a Christian, scholarly gentleman, whose imprint on the medical and community life of the Valley and the Province as a whole, will be long remembered and revered.

J.P. McG.

Linus Francis Doiron

A quiet, gentle man. One who lived a good life according to a strict code of ethics. A good friend - a good physician in the widest sense and a person who will be missed by many.

Doctor Linus Francis Doiron passed away in his sleep Thursday, January 14, 1965. He was born in Pomquet, Antigonish Co., N. S., 66 years ago. He was educated in Pomquet, Saint Anne's College and Dalhousie Medical School, from which he graduated in 1925. After graduation he conducted a general practice at Cheticamp, Cape Breton, until 1930, and in Little Brook, Digby Co., until 1938. He then took post graduate studies in Eye, Ear, Nose and Throat in London, Dublin and New York. In 1940 he began practicing his specialty in Digby and continued there until his death.

He was a member of both the Nova Scotia and Canadian Societies of Otolaryngology and Ophthalmology, and Nova Scotia and Canadian Medical Societies. He was active in community affairs having served as Chairman of the Digby Regional High School Board, President of the Digby General Hospital Staff Society, Vice President of the Digby General Hospital Board, Past President of the Digby Curling Club and Past President of the Digby Kiwanis Club. He was also a member of the Knights of Columbus.

He is survived by his wife, the former Marie Theriault of Belliveau's Cove, and by five daughters, Louise (Mrs. Marlin Moore, Calgary, Alta.), Yvonne, Saint John, N. B., Marguerite, a student at St. Francis Xavier University, Cecile, a student at Notre Dame D'Acadie, Moncton, and Claire, a student at the Digby Regional High School. Also surviving are three sisters and five brothers. His parents predeceased him.

J.R. MeC.

Robert Fail Ross

It was indeed a great privilege to have known "Bob". His life and his achievements showed remarkable development of mind, personality and talents.

He was intensely absorbed in his work as a general practitioner and had a keen knowledge of its many aspects! His practice was a large and busy one and he was able to handle it without display of frustration or haste. His judgment of a medical problem was based on wide experience which had become organized into a sound system of medical knowledge, tempered with common sense. He was eager to learn of new advances in medicine and was quick to see and apply new methods of his own. He grew to love surgery and this became a very busy part of his work. His patients had great affection for him, respect for his opinion and trust in his decision.

He was a student of the workings of organized medicine and served well in committees and offices in our local medical society and three years ago as President of Nova Scotia Medical Society. How he found time to perform these many functions and carry on his practice was always a mystery to us. He was a director of Maritime Medical Care for Colechester Branch Society for many years, and was a strong supporter of this plan and, at times, a keen critic of its administration.

Bob was a man whose innate friendliness and approachability inspired affection in every one who knew him. His colleagues could always talk to him, and receive much appreciated advice from the stores of his wisdom. His relationships

with all his associates were cordial and his charming and friendly personality made him welcome in a wide circle of friends and acquaintances. He had a great sense of seeing the ludicrous side of situations and his expression of these observations provided many a laugh in our staff meetings and in our coffee room talks. All this, in spite of his disability, the serious nature of which was well known to him.

His interests were wide-ranged and he could talk well on many subjects. His talent as an artist led to acceptance of some of his paintings for awards in the "Horner" art collection and he was busy at this every spare minute to the last. He enjoyed woodwork and in his year of retirement spent much time at it, in his basement workshop. Bob loved music and for many years sang in the church choir. He was very happy sailing his boat at Cape John where he spent his holidays at their beautiful cottage. Through the years, he was enthusiastic about gardening, fishing, golf and curling, but gradually had to give these up to make way for other interests and hobbies.

He was proud of his children and their lives are a testimony to him as a father, with a son in last year medicine, two daughters graduates from Dalhousie and one daughter, a nurse.

His death was one of those occasions in which sorrow is tempered by gratitude and admiration for a life of distinguished service and many contributions.

So, Farewell Bob, and as we say our sad farewell - we are led to remember those lines of Thomas Gray:

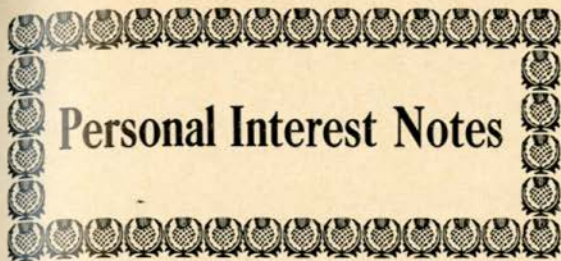
"Can storied urn, or animated bust,
Back to its mansion call the fleeting breath?
Can Honor's voice provoke the silent dust,
Or Flattery soothe the dull, cold ear of death?"

P.R.L.
T.C.S.

Lymphography and its Applications (from page 60)

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Personal Interest Notes

"Only about 60% of the graduates of Dalhousie Medical School remain to practise in the Maritimes," said **Dr. C. B. Stewart**, Dean of the School, speaking to Halifax Rotary Club on January 26th, - "only enough to replace the number who retire or die and not enough to keep pace with the growth of population". He added that the doctor shortage in the Maritimes was the greatest in Canada.

This was corroborated by Dr. Frank Dunsworth when he spoke at the Halifax Women's Council's last monthly meeting. He told them that Nova Scotia doctors were the first to present a medical plan to a provincial government with the "urgent recommendation for more intensive recruitment, training, employment and retention of medical personnel in this province" - because "the ratio of patients throughout the province was alarmingly high compared to the number of doctors", and "because of the real shortage of general practitioners".

Yet, where else can doctors so easily do "what comes naturally"? whether it be curling, skiing, fishing, hunting, shooting - even though Dr. John MacDonell, Antigonish and Dr. Tom Gorman, our President, plan to go to Vermont on their annual ski jaunt, others go to Wentworth or Bear River. Where else can one take a "Penguin" up hill and down dale within 10 minutes of one's office, - or a jeep through wood roads to hidden lakes or ride one's horse at midnight through forest never cleared since a city was founded?

When one wants to improve one's mind one can go to the various REFRESHER COURSES, like those presently running at Amherst and Springhill, or, like Dr. John MacCormick, go for a two week Dermatology, course at the Montreal General Hospital, and be elected a new town councillor (Antigonish) in one's absence. Dr. Felix Doucet, Weymouth is also attending courses at the Royal Victoria Hospital, Montreal.

When one wants a rest, i.e. a change of work, one can be a health officer like Dr. J. H. Winter of Arichat for Richmond County or give a popular lecture on "Smoking and Health" like Dr. G. M. Smith at Kentville and Windsor. One can win a McLaughlin Fellowship like Dr. S. C. Macleod a Prince Edward Island native, graduate of Dalhousie and last year's Fellow in Obstetrics and Gynaecology, and at present on the staff of Dalhousie, who is studying for a year in Melbourne Australia. One can also live to be over 96 years old as has Dr. S. W. Williamson, Dal. '96 of Yarmouth - to whom we offer felicitations.

Dr. J. Douglas Hines returned in January to continue his residency in Ophthalmology at the Victoria General and other hospitals after visiting several residency programmes in the United States. He has just finished a Basic Science Course in Ophthalmology (August, 64 - January, 65) by Harvard Medical School given at the Mass. Eye & Ear Infirmary. He was one of a class of 24 from Continental U.S.A., Canada,

Puerto Rico and the Philippines. Dr. Hines graduated in December, 1956 and practised at Middleton, N. S. until 1963.

MEDICAL-LEGAL SOCIETY FORMED

During January doctors and lawyers in Nova Scotia have formed the NOVA SCOTIA MEDICAL-LEGAL SOCIETY of the Nova Scotia Barristers Society and The Medical Society of Nova Scotia.

The inaugural meeting was addressed by Robert Kanisberg, Q.C., of Halifax. A constitutional committee was appointed composed of Ian Maxwell, M.D., Halifax, Kenneth Mathews, Q.C., Truro, Stewart Drury, Dartmouth, Lloyd Caldwell and John Filbee, M.D., Halifax.

A programme committee consisting of Walter Goodfellow, John Aldous, M.D. and Stewart McInnis was also appointed.

The background of the Society is as follows:

In 1955 a Medico-Legal Society was first formed by members of the two professions so that they could exchange views and information to their mutual advantage. There were 37 members. For various reasons the Society's meetings lapsed after four years but as a result of renewed enthusiasm, sparked by Dr. A. J. F. Griffiths, a Medical-Legal Liaison Committee was set up in 1963 composed of members from The Medical Society of Nova Scotia and the Nova Scotia Barristers Association. This Committee was formed to investigate the advisability or otherwise of placing the Society on a firmer basis as well as for other reasons which were expedient at that time.

It soon became evident that there is a very real need for a closer association of doctors and lawyers both for the purpose of mutual education and to iron out points of contention and that, whereas a Medical Legal Liaison Committee can do something to fill this need, there is a place also

for a mutual and independent joint society.

The matter was aired in the July 1964 issue of *The Nova Scotia Medical Bulletin* and our profession was circulated by a tear-sheet to enable us to form an estimate of the interest which could be expected. Twenty-six doctors answered the questionnaire and 37 lawyers notified their own Association that they were interested.

The next meeting is at H.M.C.S. Scotian at 8 p.m., March 18th when the future pattern of the Society will be decided and there will be a film and discussion on tests for intoxication. All interested are welcome.

Because there seems to be a place for a social gathering of lawyers and doctors so that they can get to know one another and a place also for a Learned Society where we can instruct one another by formal papers and presentations and one where we can hash out forensic matters, perhaps recommending changes in the law, and quite separate but just as important is a forum required where grievances can be aired. Some feel rather strongly that this responsibility should remain the province of the Medical Legal Liaison Committee. Policy decisions of this sort will have to be made at the next meeting so that it is extremely important that there be a good turn out.

BIRTHS:

To Dr. and Mrs. Robert L. Brown, (née Jean Bishop), a son, Philip Gerald, on January 28th, 1965 at the Halifax Infirmary, Halifax, N. S.

To Dr. and Mrs. B. Downey Grover, Gagetown, N. B. a son, on November 15th, 1964 at Halifax, N. S.

To Dr. and Mrs. W. Stuart Huestis, (née Corine Foster), a daughter on February 2nd, 1965 at Halifax, N. S.

To Dr. and Mrs. Clive S. Macdonald, a son, at Wolfville, N. S. on October 24th, 1965.

To Dr. and Mrs. Roland A. Perry, (née Elaine Byers, RN), a daughter, Julia MacKay, on January 18th, 1965 at the Grace Maternity Hospital, Halifax, N. S.

To Dr. and Mrs. Albert J. Shaw, (Lillian R. Flemming), a son on January 6th, 1965, at the Halifax Infirmary, Halifax, N. S.

OBITUARIES:

Dr. Linus Doiron, Dal 25 died in his sleep on January 14th, 1965, at his home in Digby where he had been a specialist in Diseases of the Ear, Eye, Nose and Throat since 1940. The following is an excerpt from a tribute written from Little Brook, Municipality of Clare. "During his stay (1930-'38) Dr. Doiron made many friends and worked tirelessly among the poor without fees being paid. These were the lean years following the depression that gripped all North America when jobs were few and far between and remuneration was very low. None knows but a doctor himself what a country doctor has to go through while practising medicine. There are no set office hours and he is on call twenty-four hours a day. Clare will not forget Dr. Linus Doiron and his many good works and the poor will pray for the repose of his soul" — Yarmouth Herald.

Dr. James Francis Hopkirk, Dal. 39, a member of the surgical staff of the Royal Victoria Hospital, Montreal died October 17th 1964 at the age of 45. Born in Stratford Ontario, he grew up in Mahone Bay and Bridgewater. He served with the RCAF for six years in World War II and was a Fellow of the Royal College of Surgeons and a diplomate of the American Board of Surgery.

On March 13th, 1963, **Dr. Andrew Colin Gillis**, died in Baltimore where he had been professor of Neurology at the University of Maryland College of Medicine. He attended Dal-

housie Medical School in 1901-02 but graduated from Baltimore Medical College in 1904.

Dr. Douglas W. M. Zwicker, died suddenly at his home in Chester, N. S., where he had practised medicine for nearly 40 years, on January 30th, 1965. He graduated from Dalhousie Medical School with honours in Surgery in 1916 and went immediately overseas. After post-graduate training, he settled in Chester where he has been public health officer for forty-one years and a full time member of the staff of the Fisherman's Memorial Hospital, Lunenburg. He was also a Chester school trustee and senior warden and vestryman of St. Stephen's Anglican Church.

NOTICE

The instruments and office equipment of the late Dr. D. W. N. Zwicker are available for purchase. Please contact Mrs. Zwicker, Chester.

A DAY IN CANCER - 1965

Following a successful initial meeting in 1964 a committee is presently working on a programme for a second meeting. This is to be held on Friday, April 9th in Halifax.

The theme will be "Surgery For The Community Surgeon" and a guest speaker will be present. The full program will be published in the April *Bulletin*.

DOMINION INCOME TAX RETURNS

A memorandum approved by the Department of National Revenue for the guidance of doctors making income tax returns relative to the year 1964 is published in the *Can. Medical Assoc. Journal*, Vol. 92 - issue February 6, 1965, page 299.

FORTY YEARS AGO

From The Nova Scotia Medical Bulletin
March, 1925

Treatment for Pneumonia.

Dr. H. A. Grant of Whycomagh, has a letter in the February issue of the Canadian Medical Association Journal, on the use of Wine of Ipecac in bringing about an early crisis in Pneumonia. Here is what Dr. Grant writes:—
"To the Editor:—

At this season of the year when pneumonia is becoming prevalent, I wish to bring before the profession a useful treatment for it. From my experience with this remedy, I regard it as a specific for pneumonia if given within twenty-four hours of the initial chill. Given after disease is well established, any time during the second to fourth day, it will shorten the course of the disease by bringing an early crisis. This remedy is wine of ipecacuanha pushed to its physiological action on the vomiting centres and then restricted to the verge of slight nausea.

To carry out the treatment, the patient should be placed in a comfortably warm room and be given from 10 to 20 minims wine of ipecac every three hours. The average dose for a robust patient is 15 minims. Heat, as afforded by a good flaxseed poultice, over the affected lobe, appears to hasten the effect of the remedy. This treatment will abort the attack if started within the first twenty-four hours. The remedy should be given in smaller doses for three days at least after the attack is aborted. If the treatment is discontinued immediately, there is danger of it lighting up again."

When setting out on a long ski trip or a hike, be prepared for any emergency such as a sprained ankle or a case of getting lost in the bush. On a ski trip, you can usually back track and find your way out, but a sudden fall of snow can obliterate the tracks. In bushland, it isn't so easy to retrace your steps, but a compass will help you. A strong police whistle will help to summon aid. If you are lost for a day or more, the best things to do is stay where you can make a fire. A pound of hard boiled candies will help to sustain you for a day or so. It is never wise to ski alone.

CLINICAL TRAINEESHIP

For any practitioner, a two weeks or longer period of full time personal refresher training in a clinical field of his choice can be arranged through the Post-Graduate Division, with the appropriate Departmental Chairman.

A plan of recommended reading, clinical experience, ward rounds and conferences under the supervision of a tutor is developed in advance. Such a programme can be timed to include, precede, or follow a conventional short course, if desired.

Arrangements for a locum tenens and for living accommodations in Halifax are the responsibility of the individual doctor.

Tuition - \$100.00.

For further details, write specifying your field of interest, to

Post-Graduate Division,
Faculty of Medicine, Dalhousie University,
Room 212, Dalhousie Public Health Clinic,
University Avenue, Halifax, N. S.

SUBSCRIPTION RATES

All members of The Medical Society of Nova Scotia receive *The Bulletin* without extra charge. The rate for Medical libraries, Hospitals and others is \$6.00 p.a. Medical Students at Dalhousie, \$2.00. All correspondence should be addressed to: Subscription Dept., Nova Scotia Medical Bulletin, Public Health Clinic, Halifax, N. S.

NEW TELESCOPES

In addition to the new Queen Elizabeth Telescope which is to be built in B.C. there are plans for the building of three major new instruments in the Southern Hemisphere. Two will be in Chile and one in Australia. They will be in the 150 inch range, and thus will be of about the same power as the Queen Elizabeth, and approaching the 200 inch giant on Mount Palomar.

Major telescopes in the past have all been in the Northern Hemisphere, there being nothing over about 40 inches in southern latitudes at present. With some of the most urgent fields for astronomical observation (including the centre of the Galaxy and the Magellanic Clouds) south of the Equator, the need for major new instruments there is pressing.